

Listing of Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A method of manufacturing a microcomponent assembly, comprising:
providing ~~a first and second microcomponents~~ microcomponent having ~~respective a first and second~~ contact areas ~~area~~ and having ~~a first feature dimensions~~ dimension less than about 50 microns;
providing a second microcomponent having a second contact area and having a second feature dimension less than about 50 microns;
forming a junction compound on at least one of the first and second contact areas;
positioning the first and second contact areas adjacent each other on opposing sides of the junction compound; and
activating the junction compound to couple the first and second microcomponents.
2. (Currently Amended) The method recited in Claim 1 wherein the first and second feature dimensions are each less than about 25 microns.
3. (Original) The method recited in Claim 1 wherein the junction compound comprises indium.
4. (Original) The method recited in Claim 1 wherein activating the junction compound electrically couples the first and second microcomponents.
5. (Original) The method recited in Claim 1 wherein the junction compound is formed on both of the first and second contact areas.
6. (Original) The method recited in Claim 1 wherein the junction compound is formed by sputtering.

7. (Original) The method recited in Claim 1 wherein the junction compound is formed by a method selected from the group consisting of:
- electroplating;
 - chemical vapor deposition (CVD);
 - plasma enhanced CVD;
 - physical vapor deposition;
 - ionized metal plasma deposition; and
 - atomic layer deposition.
8. (Original) The method recited in Claim 1 wherein activating the junction compound comprises heating the junction compound.
9. (Original) The method recited in Claim 8 wherein the junction compound is heated by heating the first and second microcomponents in a temperature-controlled process chamber.
10. (Previously Presented) The method recited in Claim 8 wherein the junction compound is heated by exposing the junction compound to a laser.
11. (Original) The method recited in Claim 8 wherein at least one of the first and second microcomponents comprises a heater element proximate the junction compound and the junction compound is heated by operating the heater element.
12. (Original) The method recited in Claim 8 wherein the junction compound is heated by thermal energy transferred from a gripping mechanism to the junction compound.
13. (Original) The method recited in Claim 1 wherein at least one of the first and second microcomponents is a nanocomponent.
14. (Original) The method recited in Claim 1 wherein one of the first and second microcomponents is a substrate.

Claims 15-27 (Canceled).

28. (Previously Presented) The method recited in Claim 1 further comprising:
providing a substrate having a third contact area;
forming an additional junction compound on at least one of the third contact area and a fourth contact area of one of the first and second microcomponents;
positioning the third and fourth contact areas adjacent opposing sides of the additional junction compound; and
activating the additional junction compound to couple the one of the first and second microcomponents having the fourth contact area to the substrate.

29. (Previously Presented) The method recited in Claim 28 wherein activating the junction compound between the first and second contact areas includes substantially simultaneously activating the additional junction compound between the third and fourth contact areas.

30. (Previously Presented) The method recited in Claim 28 wherein the third and fourth contact areas are positioned before the additional junction compound is activated.

31. (Previously Presented) A method of manufacturing a microcomponent assembly, comprising:
providing a first microcomponent having a first contact area;
providing a second microcomponent having a second contact area, wherein at least one of the first and second microcomponents has at least one feature dimension that is less than about 50 microns;
forming a junction compound on at least one of the first and second contact areas; and
coupling the first and second microcomponents by:
positioning the first and second contact areas adjacent each other on opposing sides of the junction compound; and
activating the junction compound.

32. (Previously Presented) The method recited in Claim 31 wherein activating the junction compound occurs before positioning the first and second contact areas adjacent each other on opposing sides of the activated junction compound.

33. (Previously Presented) The method recited in Claim 31 wherein activating the junction compound occurs after positioning the first and second contact areas adjacent each other on opposing sides of the un-activated junction compound.

34. (Previously Presented) The method recited in Claim 31 wherein the junction compound comprises indium.

35. (Previously Presented) The method recited in Claim 31 wherein coupling the first and second microcomponents by the positioning and the activating includes mechanically and electrically coupling the first and second microcomponents.

36. (Previously Presented) The method recited in Claim 31 wherein at least one of the first and second microcomponents comprises a heater element and activating the junction compound comprises heating the junction compound by operating the heater element.

37. (Previously Presented) The method recited in Claim 31 wherein activating the junction compound comprises heating the junction compound by thermal energy transferred from a gripping mechanism to the junction compound.

Claims 38-40. (Canceled).

41. (New) The method recited in claim 1 wherein activating the junction compound to couple the first and second microcomponents includes activating the junction compound to mechanically and electrically couple the first and second microcomponents.

42. (New) The method recited in claim 41 wherein activating the junction compound to mechanically and electrically couple the first and second microcomponents includes activating the junction compound via thermal energy.

43. (New) The method recited in Claim 41 wherein at least one of the first and second microcomponents comprises a heater element, and wherein activating the junction compound via thermal energy includes operating the heater element.